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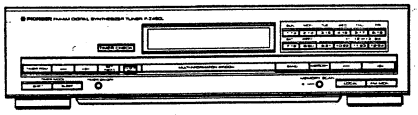
Service Manual



ORDER NO.
ARP1911

FM/AM DIGITAL SYNTHESIZER TUNER

F-Z460L

MODEL F-Z460L AND F-Z460 HAVE FOLLOWING VERSIONS:

Type	Applicable model		Power requirement	Destination
	F-Z460L	F-Z460		
ZEB	○	—	(DC power supply)	European continent and United Kingdom
ZEWZ	—	○	(DC power supply)	West Germany
ZEWX1B	○	—	(DC power supply)	European continent
ZIOX1B	—	○	(DC power supply)	Italy

- This manual is applicable to the F-Z460L / ZEB type.
- As to the other types, refer to applicable service manuals.
- The F-Z460L covers MW/LW bands while the F-Z460 covers MW only.
- Ce manual poul le service comprend les explications de réglage en français.
- Este manual de servicio trata del método ajuste escrito en español.
- As to the system composition, refer to following service manuals.

Applicable model	Order No.
S-777D/S-555D	ARP1930
S-999D	ARP1929

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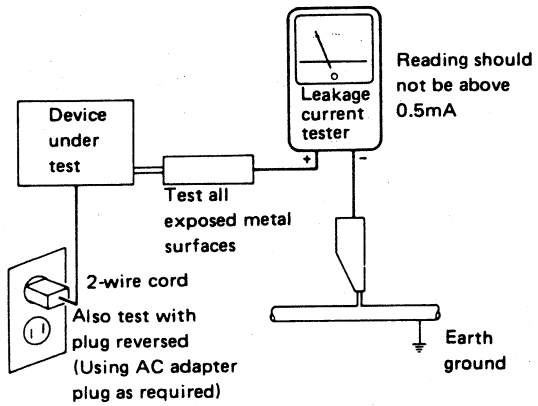
1. SAFETY INFORMATION

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.



AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which dose not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

2. EXPLODED VIEWS, PACKING AND PARTS LIST

NOTES:
- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

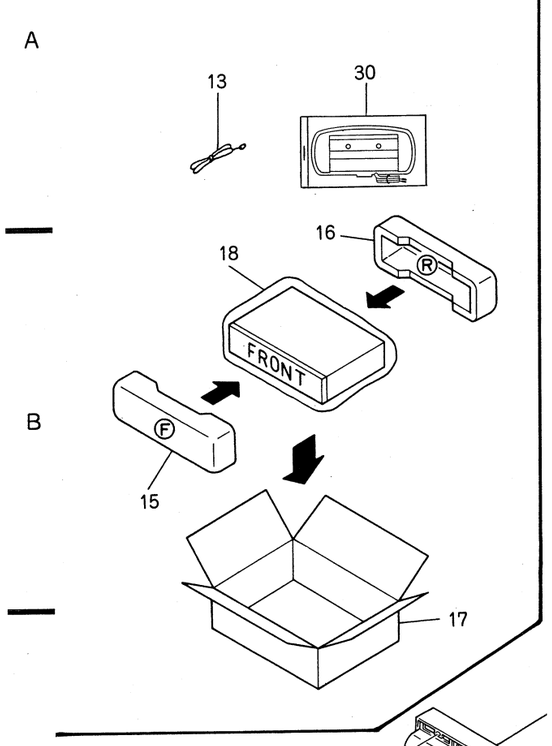
2.1 Parts List

Mark	No.	Description	Parts No.
	1.	Timer set button	AAD1677
	2.	Band button	AAD1678
	3.	Timer check button	AAD1679
	4.	Station button	AAD1680
	5.	KIN button	AAD1682
	6.	FL filter	AAK1761
	7.	Acrylic panel	AAK1859
	8.	Pioneer batch	
	9.	- - - - - -	
	10.	Screw	ABA-298
	11.	Screw	ABA1018
	12.	Cord with plug	ADE1067
	13.	FM antenna	ADH1005
	14.	- - - - - -	
	15.	Front pad	AHA1270
	16.	Rear pad	AHA1271
	17.	Packing case	AHD1773
	18.	Sheet	AHG1017
	19.	Front panel ass'y	AMB1574
	20.	PCB mold	
	21.	Foot ass'y	
	22.	Chassis	
	23.	Rear panel	
	24.	Bonnet	ANE1212
	25.	Caution card	ARH1047
	26.	Tuner ass'y	AWE1141
	27.	Display ass'y	AWP1026
	28.	Screw	BBZ26P080FMC
	29.	Foot ass'y	RXA1276
	30.	Loop antenna	ATB1006

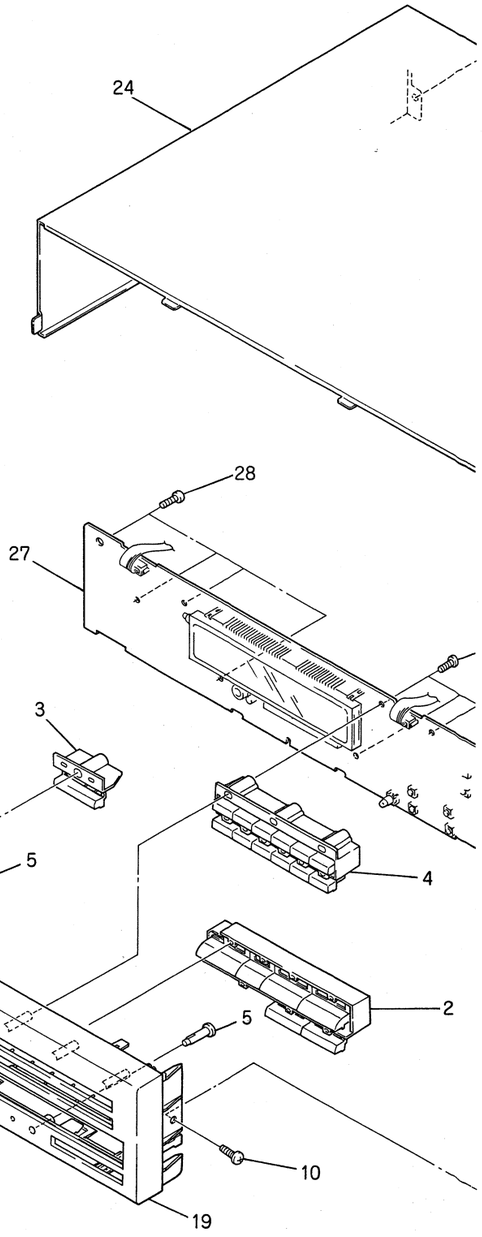
NOTE: As to the operating instructions, refer to following service manual.

Applicable model	Order No.
S-777D/S-555D	ARP1930
S-999D	ARP1929

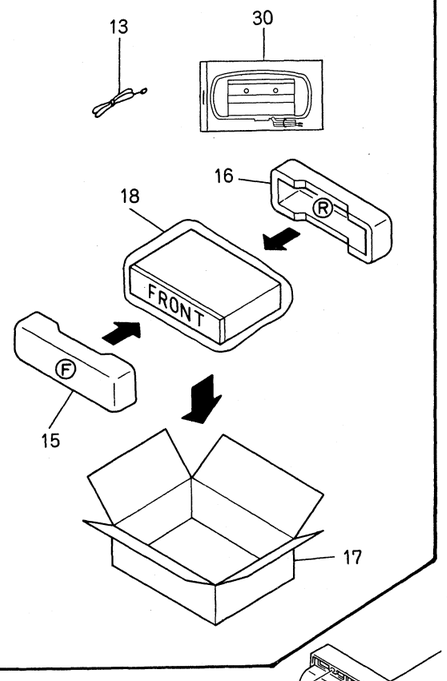
2.2 Packing



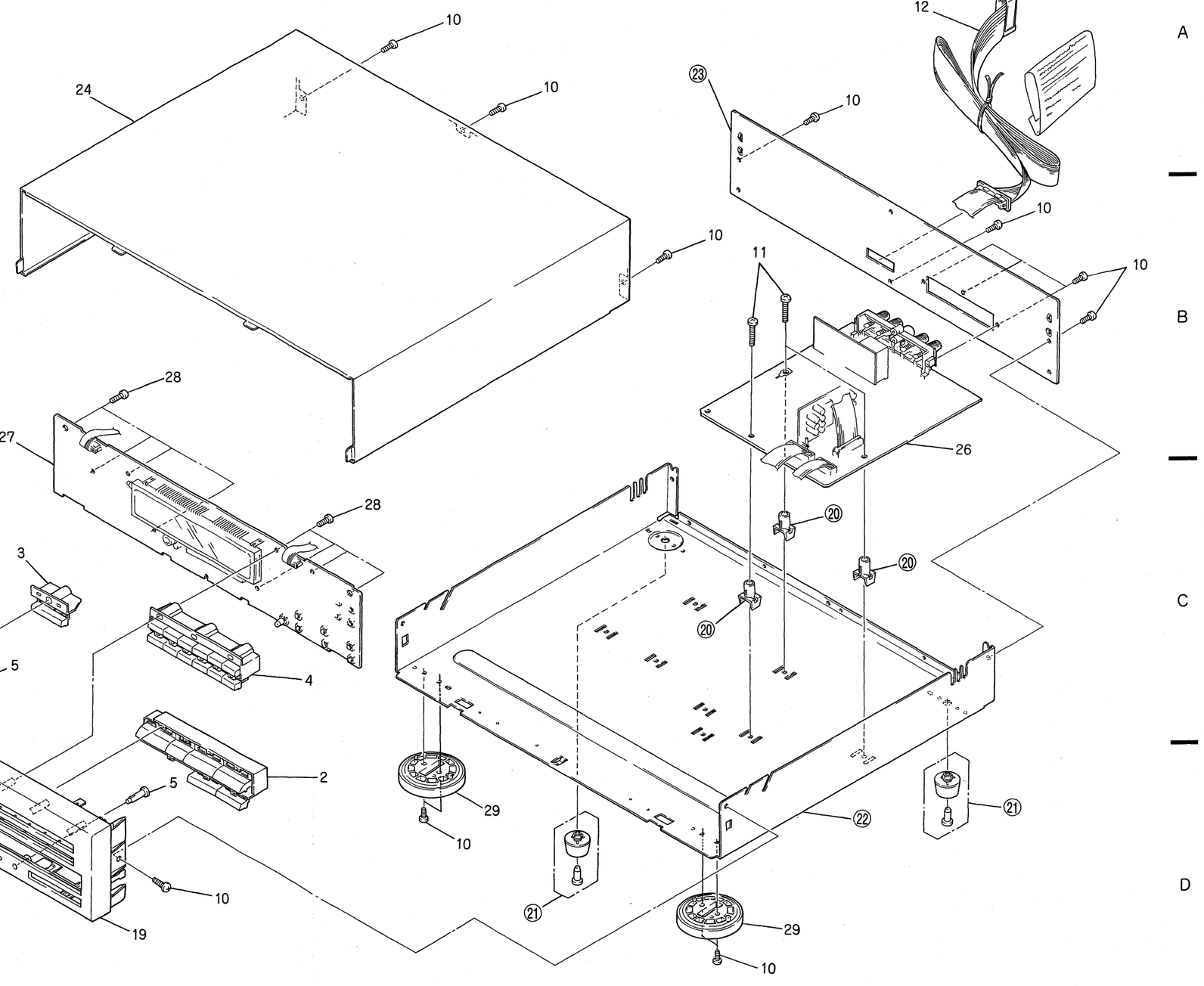
2.3 Exploded views



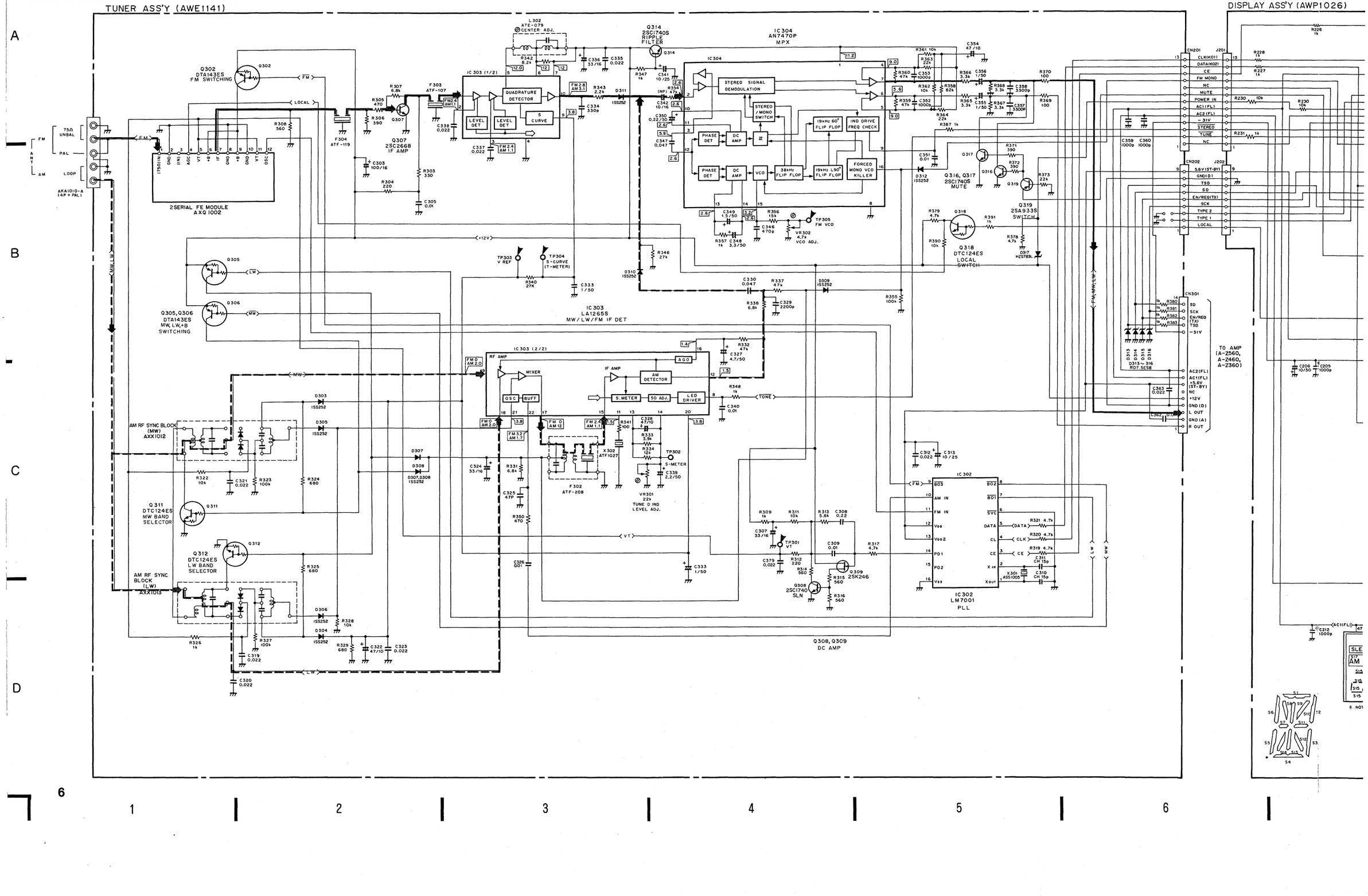
2.2 Packing

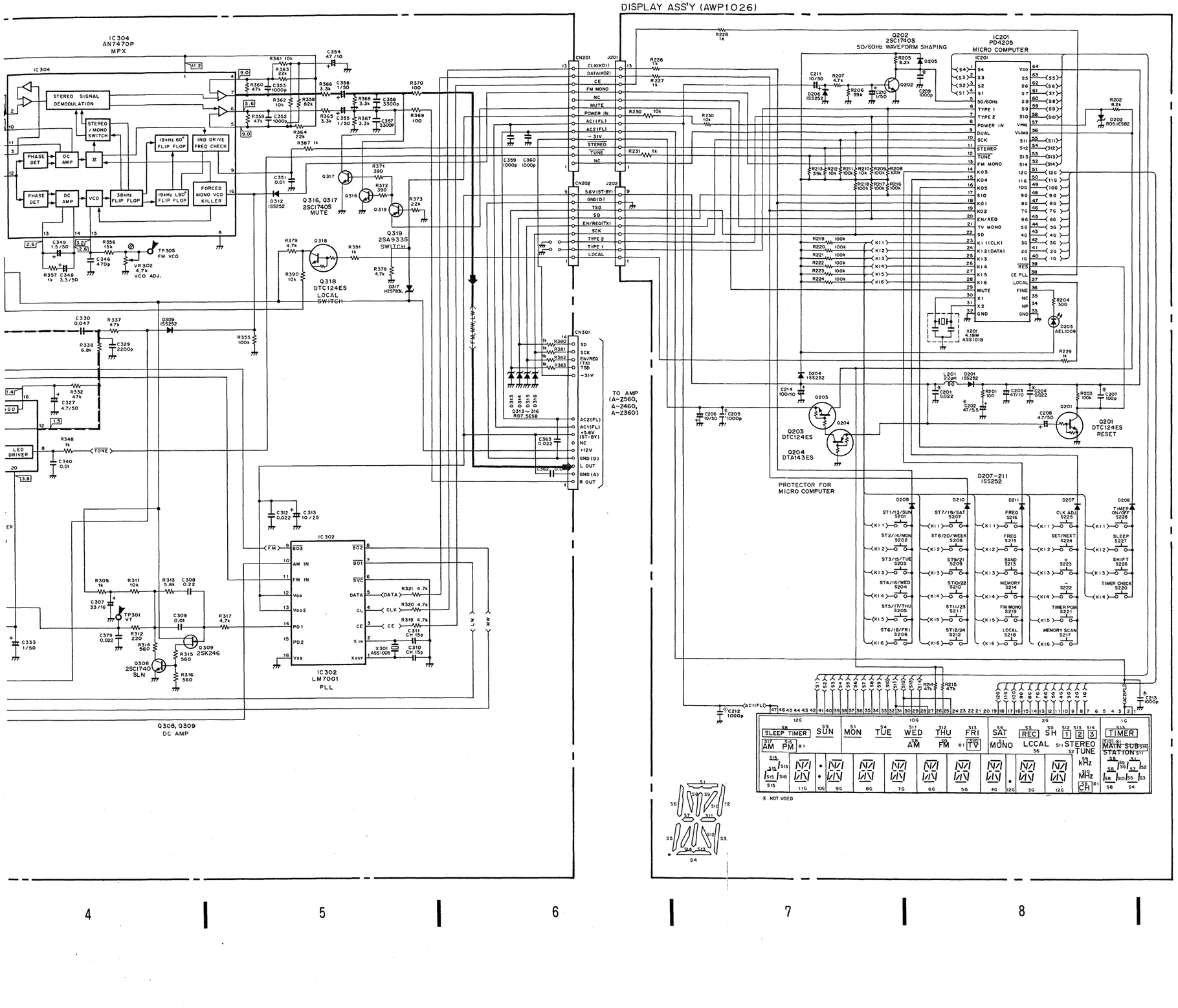


2.3 Exploded views



3. SCHEMATIC DIAGRAM





1. **RESISTORS:**
Indicated in Ω, 1/8, 1/4W, ±5% tolerance unless otherwise noted
K; kΩ, M; MΩ, (F); ±1%, (G); ±2%, (K); ±10%, (M); ±20% tolerance.

2. **CAPACITORS:**
Indicated in capacity (μF) / voltage (V) unless otherwise noted p; pF.
Indication without voltage is 50V except electrolytic capacitor.

3. **VOLTAGE CURRENT:**
: DC voltage (V) at no input signal.
Furthermore, FM and AM indicate the silent voltage at FM function and AM (MW, LW) function respectively.

mA ; DC current (V) at no input signal.

mV ; Signal voltage at FM 400Hz ±75 Hz DEV.

4. **OTHERS**
- ←; Signal route.
- ⊘ ; Adjusting point.
- The ※ mark found on some component parts indicates the importane of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- ⚠ marked capacitor and resistor have parts number.
- This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

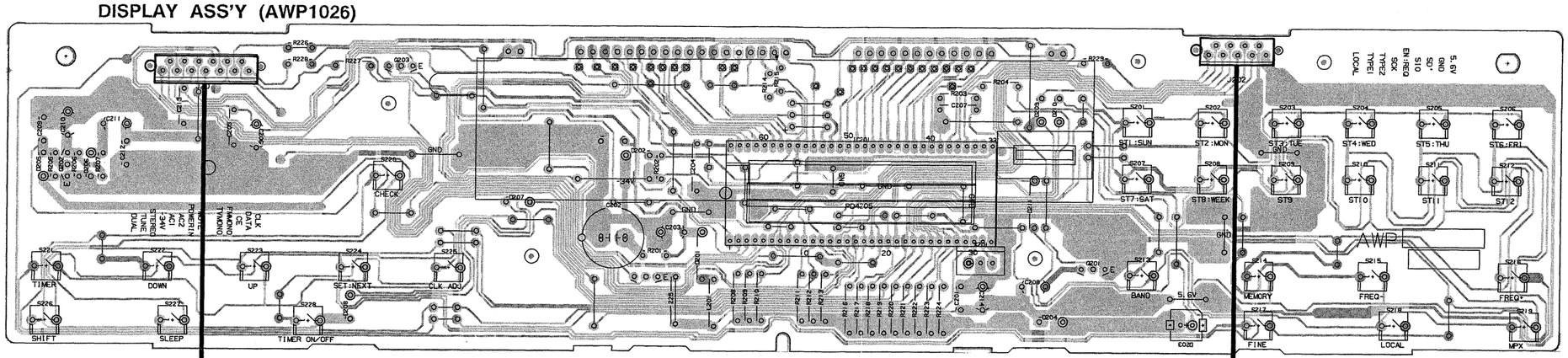
5. **SWITCHES (The underline indicates the switch position)**
Display Ass'y

S201 : ST1/13/SUN	S215 : FREQ –
S202 : ST2/14/MON	S216 : FREQ +
S203 : ST3/15/TUE	S217 : MEMORY SCAN
S204 : ST4/16/WED	S218 : LOCAL
S205 : ST5/17/THU	S219 : FM MONO
S206 : ST6/18/FRI	S220 : TIMER CHECK
S207 : ST7/19/SAT	S221 : TIMER PGM
S208 : ST8/20/WEEK	S222 : –
S209 : ST9/21	S223 : +
S210 : ST10/22	S224 : SET/NEXT
S211 : ST11/23	S225 : CLK ADJ
S212 : ST12/24	S226 : SHIFT
S213 : BAND	S227 : SLEEP
S214 : MEMORY	S228 : TIMER ON/OFF

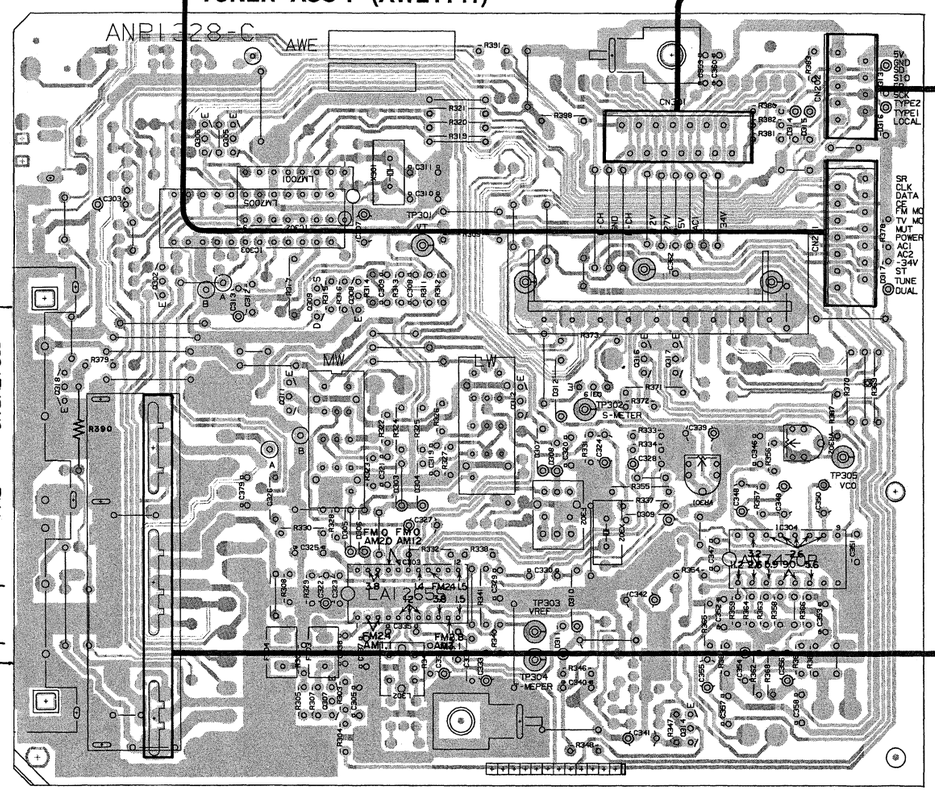
4. P.C. BOARD CONNECTION DIAGRAM

● See from the parts mount side.

DISPLAY ASS'Y (AWP1026)

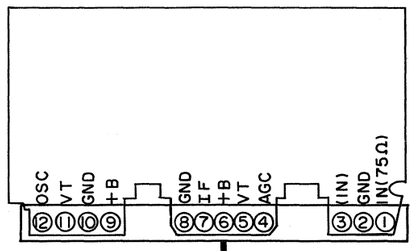


TUNER ASS'Y (AWE1141)



TO AMP
(A-Z560, A-Z460, A-Z360)

2SERIAL FE MODULE ASS'Y
(AXQ1002)



1. This P.C.B connection diagram is seen from the parts mount side.
2. The parts mounted on to the P.C.B can be replaced with those shown in the following correspondence table with wiring marks.

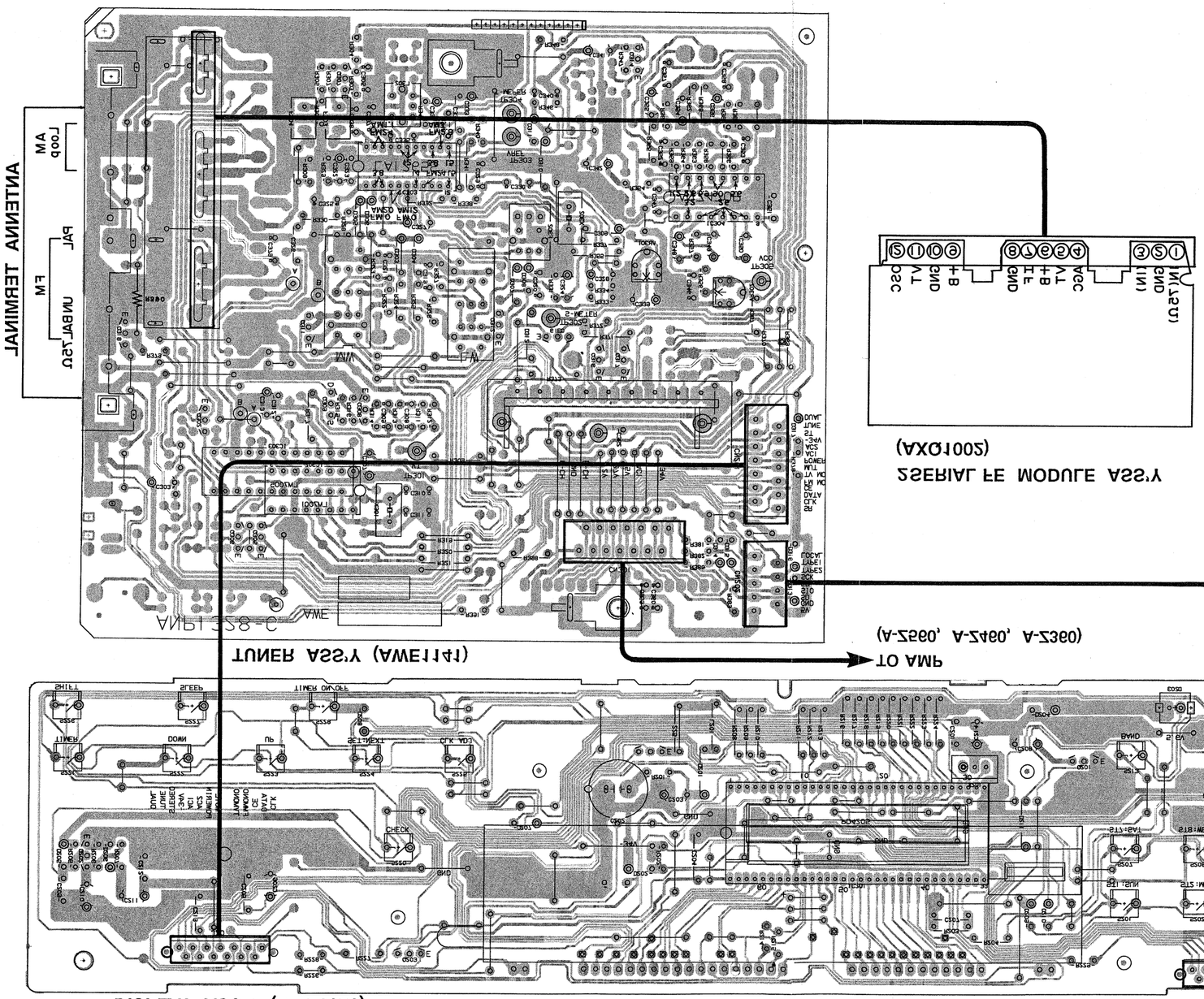
Indication of the P.C.B. pattern	Symbol of corresponding parts	Parts name
Q504 (E)	or (E) (E)	Transistor
Q215	or	Radiator type transistor
D203	D203	Diode
R237	R237	Resistor
C513	+	Condenser (Polar type)
C518		Condenser (Non-polar type)

Others

Wiring mark on the P.C.B pattern diagram	Parts list
IC	IC
S	Switch
RY	Relay
L	Coil
F	Filter
VR	Variable resistor or semi-fixed resistor

3. The condenser terminal marked with double circles (◎) represents (–) terminal.
4. The diode terminal marked with double circles (◎) represents the cathode side.
5. The transistor terminal marked with "E" represents an emitter.

A.P.C. BOARD CONNECTION DIAGRAM



● See from the copper foil pattern side.

5. P.C.B's PARTS LIST

NOTES:

- *Parts without part number cannot be supplied.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω	*56 × 10¹*	*561*	*RD1/4PS 5 6 1 J*
47kΩ	*47 × 10³*	*473*	*RD1/4PS 4 7 3 J*
0.5Ω	*0R5*		*RN2H 0 R 5 K*
1Ω	*010*		*RS1P 0 1 0 K*

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	*562 × 10¹*	*5621*	*RN1/4SR 5 6 2 1 F*

TUNER ASS'Y (AWE1141)

SEMICONDUCTORS

Mark	No.	Description	Parts No.
	IC302	PLL IC	LM7001
	IC303	AM/FM IC	LA1265S
	IC304	MPX IC	AN7470P
	Q302, Q305	TRANSISTOR	DTA143ES
	Q306	TRANSISTOR	DTA143ES
	Q307	TRANSISTOR	2SC2668
	Q308	TRANSISTOR	2SC1740SLN
	Q309	TRANSISTOR	2SK246
	Q311,Q312	TRANSISTOR	DTC124ES
	Q314,Q316	TRANSISTOR	2SC1740S
	Q317	TRANSISTOR	2SC1740S
	Q318	TRANSISTOR	DTC124ES
	Q319	TRANSISTOR	2SA933S
	D303,D304	DIODE	1SS252
	D305,D306	DIODE	1SS85
	D307-D312	DIODE	1SS252
	D313-D316	ZENER DIODE	RD7.5ESB
	D317	ZENER DIODE	HZS7B3L

COILS AND FILTERS

Mark	No.	Description	Parts No.
	L302	COIL	ATE-079
	F302	AM CERAMIC FILTER	ATF-208
	F303	FM CERAMIC FILTER	ATF-107
	F304	FM CERAMIC FILTER	ATF-119

CAPACITORS

Mark	No.	Description	Parts No.
	C303	ELECTR. CAPACITOR	CEAS101M16
	C305	CERAMIC CAPACITOR	CKDYF103Z50
	C307	ELECTR. CAPACITOR	CEAS330M16
	C308	AUDIO FILM CAPACITOR	CFTXA224J50
	C309	CERAMIC CAPACITOR	CKDYF103Z50
	C310,C311	CERAMIC CAPACITOR	CCDCH150J50
	C312	(0.022μF)	ACG1022
	C313	ELECTR. CAPACITOR	CEAS100M25
	C319-C321	CERAMIC CAPACITOR	CKDYF223Z50
	C322	ELECTR. CAPACITOR	CEAS470M10
	C323	(0.022μF)	ACG1022
	C324	ELECTR. CAPACITOR	CEAS330M16
	C325	(47P)	ACG1016
	C326	(0.01μF)	ACG1021
	C327	ELECTR. CAPACITOR	CEAS4R7M50
	C328	ELECTR. CAPACITOR	CEAS470M10
	C329	CERAMIC CAPACITOR	CKDYB222K50
	C330	CERAMIC CAPACITOR	CKDYF473Z50
	C333	ELECTR. CAPACITOR	CEAS010M50
	C334	(330P)	ACG1018
	C335	CERAMIC CAPACITOR	CKDYF223Z50
	C336	ELECTR. CAPACITOR	CEAS330M16
	C337,C338	CERAMIC CAPACITOR	CKDYF223Z50
	C339	ELECTR. CAPACITOR	CEAS2R2M50
	C340	(0.01μF)	ACG1021
	C341	ELECTR. CAPACITOR	CEAS100M25
	C342	ELECTR. CAPACITOR	CEANP100M16
	C346	STEEL CAPACITOR	ACE1039
	C347	CERAMIC CAPACITOR	CKCYF473Z50
	C348	ELECTR. CAPACITOR	CEAS3R3M50
	C349	ELECTR. CAPACITOR	CEAS1R5M50
	C350	ELECTR. CAPACITOR	CEASR22M50
	C351	(0.01μF)	ACG1021
	C352,C353	CERAMIC CAPACITOR	CKCYB102K50
	C354	ELECTR. CAPACITOR	CEAS470M10
	C355,C356	ELECTR. CAPACITOR	CEAS010M50
	C357,C358	CERAMIC CAPACITOR	CKCYB332K50
	C359,C360	(1000P)	ACG1020
	C362	(0.01μF)	ACG1021
	C379	CERAMIC CAPACITOR	CKDYF223Z50

RESISTORS

Mark	No.	Description	Parts No.
	VR301	VR (22KΩ)	ACP1027
	VR302	VR (4.7KΩ)	ACP1024
		OTHER RESISTORS	RD1/8PM□□□J

Mark	No.	Description	Parts No.
OTHERS			
		ANTENNA TERMINAL 4P	AKA1010
	CN201	13P JAMPER CONNECTOR	KPE13
	CN202	9P JAMPER CONNECTOR	KPE9
	CN301	14P JAMPER CONNECTOR	KPE14
	X301	CRYSTAL RESONATOR	ASS1005
	X302	SERAMIC RESONATOR	ATF1027
		AM RF SINC BLOK (MW)	AXX1012
		AM RF SINC BLOK (LW)	AXX1013
*1		2 SERIAL FE MODULE ASS'Y	AXQ1002

*1 : Component parts of 2 Serial FE Module (AXQ1002) are not supplied in service.

DISPLAY ASS'Y (AWP1026)

Mark	No.	Description	Parts No.
SEMICONDUCTORS			
	IC201	TUNER CONTROL MICON	PD4205
	Q201	TRANSISTOR	DTC124ES
	Q202	TRANSISTOR	2SC1740S
	Q203	TRANSISTOR	DTC124ES
	Q204	TRANSISTOR	DTA143ES
	D201	DIODE	ISS252
	D202	ZENER DIODE	RD5.1ESB2
	D203	LED	AEL1009
	D204-D211	DIODE	1SS252
SWITCHES			
	S201-S228	TACT SWITCH	ASG1029
		ST1/13 SUN, ST2/14 MON, ST3/15 TUE, ST4/16 WED, ST5/17 THU, ST6/18 FRI, ST7/19 SAT, ST8/20 WEEK, ST9/21, ST10/22, ST11/23, ST12/24, BAND, MEMORY, FREQ –, FREQ +, MEMORY SCAN, LOCAL, FM MONO, TIMER CHECK, TIMER PGM, –, +, SET/NEXT, CLK ADJ, SHIFT, STEEP, TIMER ON/OFF	
COIL			
	L201	AXIAL INDUCTOR	LAU220K
CAPACITORS			
	C201	(0.022μF)	ACG1022
	C202	CEA (47000/5.5V)	ACH1070
	C203	ELECTR. CAPACITOR	CEJA470M10
	C204	(0.022μF)	ACG1022
	C205	(1000P)	ACG1020
	C206	ELECTR. CAPACITOR	CEJA100M50
	C207	(100P)	ACG1017
	C208	ELECTR. CAPACITOR	CEJA4R7M50
	C209	(1000P)	ACG1020
	C210	ELECTR. CAPACITOR	CEJA010M50
	C211	ELECTR. CAPACITOR	CEJA100M50
	C212,C213	(1000P)	ACG1020
	C214	ELECTR. CAPACITOR	CEJA101M10
RESISTORS			
		ALL RESISTORS	RD1/8PM□□□J
OTHERS			
	V201	FL TUBE	AAV1082
	X201	SERAMIC RESONATOR	ASS1018

6. ADJUSTMENTS

6-1 Adjustment of the FM tuner section

- Set the mode selector to FM BAND.
- Connect the wiring as shown in the Fig. 6-2.

Step No.	Adjustment title	FM SG (1kHz ± 75kHz dev.)		Reception frequency display	Adjustment location	Specifications
		Frequency (MHz)	Level (dB μ V)			
1	Center adjustment	98.0	60	98.0 MHz	L302	Adjust so that the voltage between the TP303 and TP304 becomes 0V ± 50mV.
2	VCO adjustment	Non-modulation	80	98.0 MHz	VR302	Adjust so that the output of the TP305 becomes 76kHz ± 0.5kHz.
3	TUNED IND. Lighting level *1	98.0 *2 (Stereo modulation)	17 (±3dB)	98.0MHz	VR301	Adjust tothe position where the indicators of TUNED and STEREO start to light up.

*1 When 2 serial FE module assy (4 serial FE module assy for F-Z460/ZEWZ and ZIOX1B) has been replaced, make sure to adjust the lighting level.

*2 Stereo modulation : Main 1 kHz L + R ± 68.25 Hz dev.
Pilot 19 kHz ± 6.75 kHz dev.

6-2 Adjustment of the MW tuner section.

- Set the mode selector to MW BAND.
- Connect the wiring as shown in the Fig. 6-2.

Step No.	Adjustment title	AM SG (400Hz 30% modulation)		Reception frequency display	Adjustment location	Specifications
		Frequency (kHz)	Level (dB μ V)			
1	Tracking adjustment *1	603	Weak input	603 kHz	MW ANT coil	Adjust so that the voltage between the TP-302 and earthing becomes maximum.
2		1,395		1,395 kHz	TC301	
3	IF Adjustment *2	603		603 kHz	F302	

*1 : F-Z460/ZEWZ and F-Z460/ZIOX1B only
*2 : F-Z460/ZIOX1B only

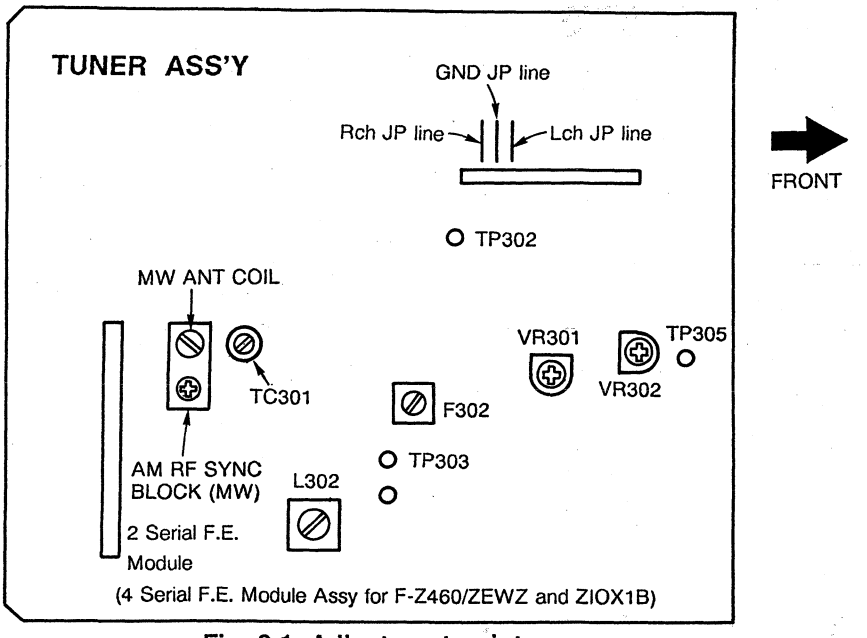


Fig. 6-1 Adjustment point

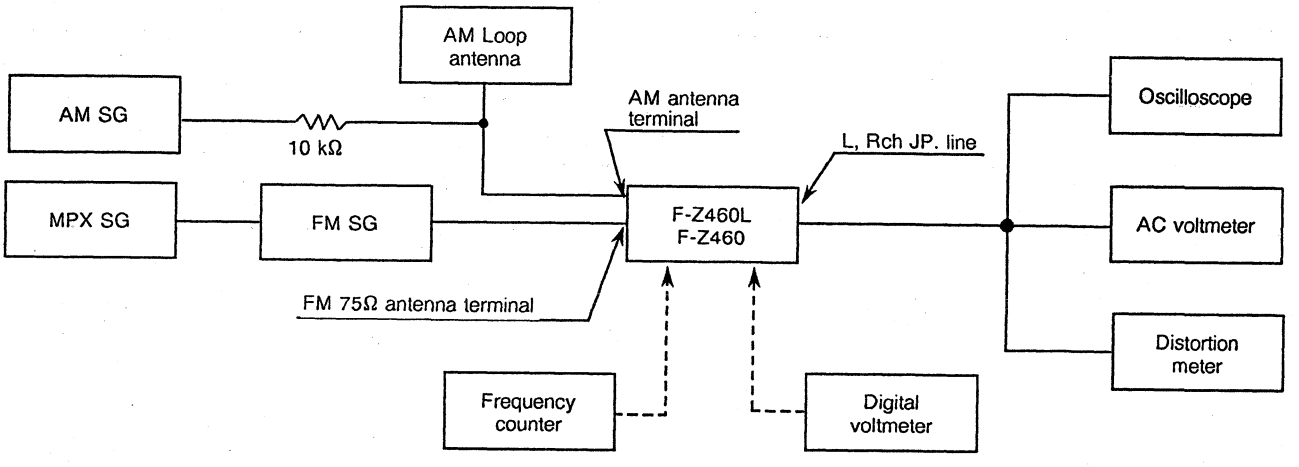


Fig. 6-2 MW and FM adjustment wiring diagram

6. RÉGLAGE

6-1 Réglage du tuner FM

- Régler le sélecteur de mode sur la position FM BAND.
- Connecter le câblage comme indiqué sur la Fig. 6-2.

Etape No.	Items de réglage	FM SG (1kHz ± 75kHz dev.)		Affichage de fréquence de reception	Liea de réglage	Caractéristiques
		Fréquence (MHz)	Niveau (dB μ V)			
1	Réglage centre	98.0	60	98.0 MHz	L302	Régler de sorte que la tension entre TP303 et TP304 devienne 0 V ±50 mV.
2	Réglage VCO	Non modulation	80	98.0 MHz	VR302	Régler de sorte que la sortie de TP305 devienne 76 kHz ±0,5 kHz.
3	TUNED IND. Niveau dàéclairage *1	98.0 *2 (Modulation stéréophonique)	17 (±3dB)	98.0MHz	VR301	Régler sur la position où les indicateurs de TUNED et STEREO commencent à s'allumer.

*1 Lorsqu'un ensemble module FE double (ensemble module FE quadruple pour F-Z460/ZEWZ et ZIOX1B) a été remplacé, toujours ajuster le niveau d'éclairage.
*2 Modulation stéréo: Principal 1kHz L + R ±68,25Hz dév.
Pilote 19kHz ±6,75kHz dév.

6-2 Réglage du tuner PO (MW)

- Régler le sélecteur de mode sur la position MW BAND.
- Connecter le câblage comme indiqué sur la Fig. 6-2.

Etape No.	Items de réglage	FM SG (1kHz ± 75kHz dev.)		Affichage de fréquence de réception	Liea de réglage	Caractéristiques
		Fréquence (kHz)	Niveau (dB μ V)			
1	Réglage d'alignement *1	603	Entrée faible	603 kHz	Bobine MW ANT	Régler de sorte que la tension entre TP-302 et la mise à la terre devienne maximum.
2		1,395		1,395 kHz	TC301	
3	Réglage FI *2	603		603 kHz	F302	

*1 : F-Z460/ZEWZ et F-Z460/ZIOX1B seulement
*2 : F-Z460/ZIOX1B seulement

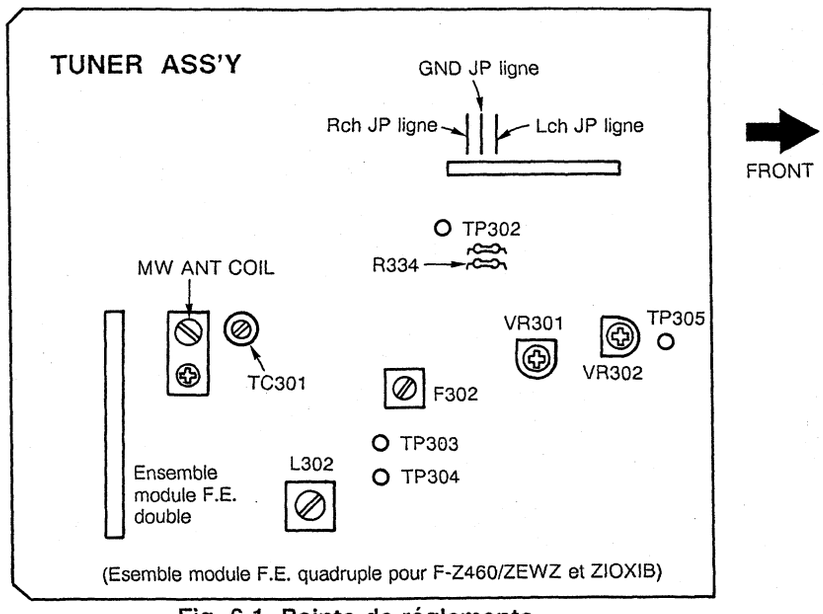


Fig. 6-1 Pointe de réglemente

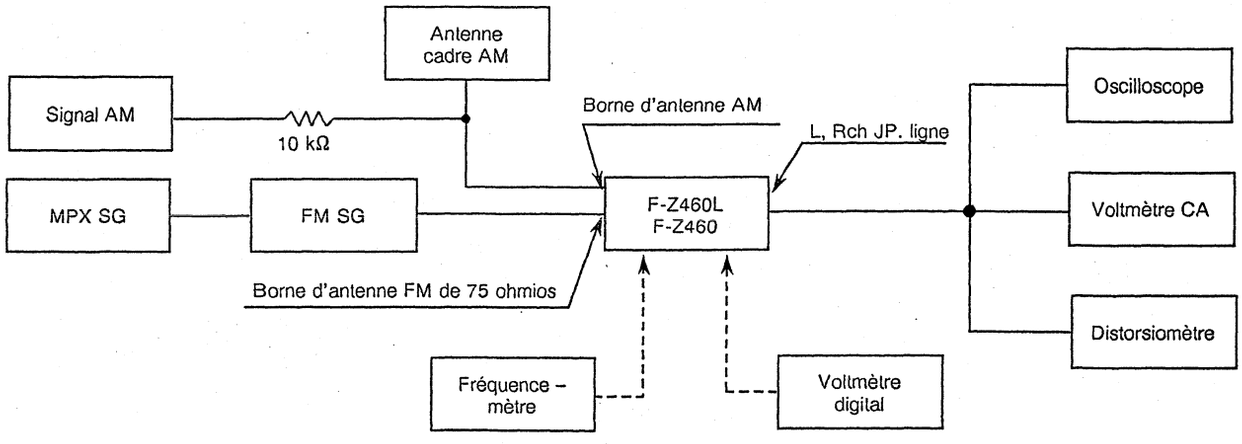


Fig. 6-2 Diagramme de càblage de réglage FM et MW

6. AJUSTE

6-1 Ajuste del sintonizador de FM

- Ajustar el selector de modo a FM BAND.
- Conectar el conexionado de la manera observada en la Fig. 6-2.

Nº de paso	Items de ajuste	FM SG (1kHz ± 75kHz dev.)		Frecuencimetro de receptión	Lugar de ajuste	Especificaciones
		Frecuencia (MHz)	Nivel (dB μ V)			
1	Ajuste central	98.0	60	98.0 MHz	L302	Ajustar de manera que la tensión entre TP303 y TP304 quede en 0V ± 50mV.
2	Ajuste de VCO	Sin modulación	80	98.0 MHz	VR302	Ajustar de manera que la salida de TP305 sea de 76kHz ± 0,5kHz.
3	TUNED IND. Nivel de iluminación *1	98.0 *2 (Modulación estereofónica)	17 (± 3dB)	98.0MHz	VR301	Ajustar a la posición donde comiencen a iluminarse los indicadores de TUNED y STEREO.

*1 Cuando se haya reemplazado un conj. de módulo fe doble (conj. de módulo FE cuádruple para F-Z460/ZEWZ y ZIOX1B), asegurarse de ajustar el nivel de iluminación.
*2 Modulación estereo: Principal 1kHz L + R ± 68,25Hz dev.
Pilote 19kHz ± 6,75kHz dev.

6-2 Ajuste del sintonizador de MW

- Ajustar el selector de modo a MW BAND.
- Conectar el conexionado de la manera mostrada en la Fig. 6-2.

Nº de paso	Items de ajuste	FM SG (1kHz ± 75kHz dev.)		Frecuencí-metro de recepción	PLugar de ajuste	Especificaciones
		Frecuencia (kHz)	Nivel (dB μ V)			
1	Ajuste de seguimiento *1	603	Entrada débil	603 kHz	Bobina MW ANT	Ajustar de manera que la tensión entre TP-302 y tierra sea máxima.
2		1,395		1,395 kHz	TC301	
3	Ajuste de IF *2	603		603 kHz	F302	

*1 : Sólo F-Z460/ZEWZ y F-Z460/ZIOX1B
*2 : Sólo F-Z460/ZIOX1B

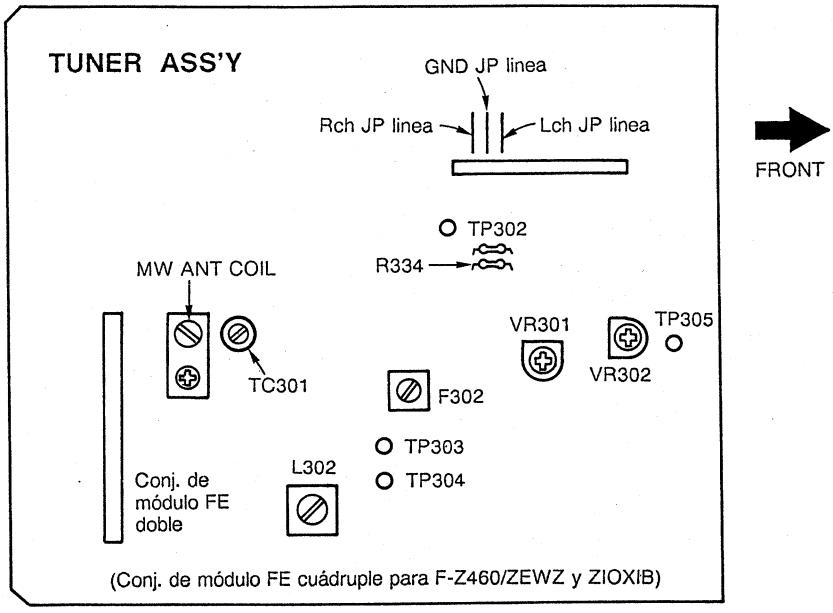


Fig. 6-1 Puntos de ajuste

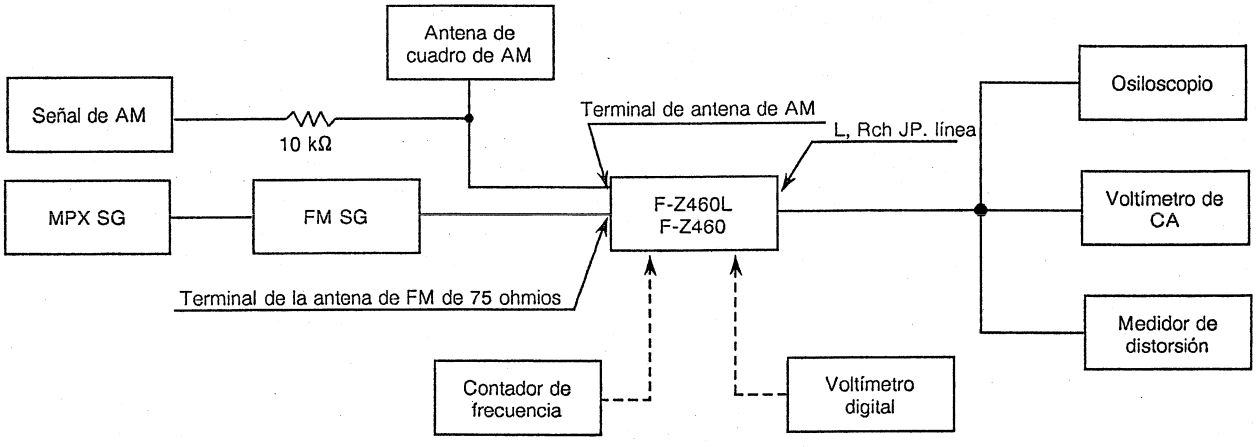


Fig. 6-2 Diagramma de conexión de ajuste de MW y FM

7. IC INFORMATION

7.1 PD4205

Terminal No.	Name	I/O	Terminal function
1	S1	O	Output to the Segment of the FL display tube.
2	S2		
3	S3		
4	S4		
5	50/60 Hz	I	AC (50/60 Hz) detecting terminal (If the timer clock control signal and 2 or more pulses are not detected, the function returns to the back-up mode.)
6	TYPE 1	I	Input terminal of discrimination signal of the destination. (See 7.1.2.)
7	TYPE 2		
8	POWER IN	I	ON/OFF detection of power for the amplifier. H: Power ON
9	DUAL	I	Not used.
10	SCK	I	Clock (Communication terminal with the amplifier at power ON)
11	$\overline{\text{STEREO}}$	I	Indication of receiving of the stereophonic broad-casting. "L": Stereophonic, "H": Non-stereophonic To be used as data for FL indication
12	$\overline{\text{TUNE}}$	I	Detection of staiton. "L" : Station available, "H" : Station unavailable To be used as data for FL indication
13	FM MONO	I/O	Output of control signal of forced monaural at FM mode. When the forced monaural is ON : "H" is outputted. When the forced monaural is OFF and TUNE is "H" : "H" is outputted. When the forced monaural is OFF and TUNE is "L" : "L" is outputted. At AM mode : "H" is outputed.
14	KO3	O	Key matrix output terminal
15	KO4		
16	KO5		
17	SA	I/O	Data (Communication terminal with the amplifier at power ON)
18	KO1 (CLK)	I/O	Terminal for control of PLL IC (IC302:LM7001) and key matrix output terminal (See 7.1.1)
19	KO2 (DATA)		
20	EN/REQ (TX)	I/O	Enable/Request (Communication terminal with the amplifier at powor ON)
21	TV MONO	I/O	Not used
22	TSD	I/O	Communication terminal with the amplifier at power stand-by mode.
23	KI1	I	Key matrix input terminal
24	KI2		
25	KI3		
26	KI4		
27	KI5		
28	KI6		

Terminal No.	Name	I/O	Terminal function
29	MUTE	O	Mute output terminal. "H" : Mute ON. "L" : Mute OFF. Muting for 800 msec immediately after PLL data setting is changed.
30	X1	I	Terminal for the main clock oscillation (4.19 MHz)
31	X2	O	
32	GND	—	GND
33			
34	NC	—	Not used
35			
36	FINE	I/O	Memory scan LED drive (Memory scan ON; "L", OFF ; "H")
37	LOCAL	I/O	FM ON : "H", OFF: "L" Always "L" at AM mode
38	CE PLL		Terminal for PLL IC (IC302 : LM7001) control (Refer to 7.1.1.)
39	RESET :	I	Resetting from the back-up mode or initialization
40	1G	O	Output to the grid of the FM display tube
41	2G		
42	3G		
43	4G		
44	5G		
45	6G		
46	7G		
47	8G		
48	9G		
49	10G		
50	11G		
51	12G		
52	S5	O	Output to the segment of the FM display tube.
53	S6		
54	S7		
55	S8		
56	V_{LOAD}	I	Power supply for turning off the FM indicator (–34V), Impressed terminal
57	V_{PRE}	I	Power supply for the pre-driver of the FM indicator driver (–5V), impressed terminal.
58	S9	O	Output to the segment of the FM display tube.
59	S10		
60	S11		
61	S12		
62	S13		
63	S14		
64	V_{DD}	—	Power supply terminal

7.1.1 PLL IC (LM7001) Output Port Function

This device utilize the output port of PLL IC (LM7001) as an expanded output terminal for the micro computer (PD4205).

Terminal No. of LM7001	Name of LM7001	I/O	Terminal function of LM7001
7	$\overline{OUT1}$	$\overline{LW}$	At LW mode : "L" At FM and MW mode : "H"
8	$\overline{OUT2}$	$\overline{MW}$	At MW mode : "L" At FM and LW mode : "H"
9	$\overline{OUT3}$	$\overline{FM}$	At FM mode : "L" At MW and LW mode : "H"

7.1.2 Changing according to destination

Functions can be changed according to the destination by 6 and 7 pin of the micro computer.

Type 1 (6 pin)	Type 2 (7 pin)	Destination	Model
L	H	FM/MW/LW band area	F-Z460L/ZEB, ZEWX1B
H	L	FM/MW band, 9 kHz/50 kHz stepping area	F-Z460/ZEWZ, ZIOX1B
H	H	FM/MW band, 10 kHz/50 kHz stepping area	—

8. SPECIFICATIONS

FM/AM Tuner: F-Z460L

FM Tuner Section

Frequency range ..... 87.5 MHz to 108 MHz
Usable Sensitivity ..... Mono: 12.8 dBf, IHF (1.2 μV/75 Ω)
50 dB Quieting Sensitivity..... Mono: 19.2 dBf, IHF (2.5 μV/75 Ω)
Sensitivity (DIN) ..... Mono S/N 26 dB: 1 μV/75 Ω
Stereo S/N 46 dB: 30 μV/75 Ω
Signal-to-Noise Ratio (IHF, 85 dBf Input) ..... Mono: 77 dB
Stereo: 74 dB
Signal-to-Noise Ratio (DIN)..... Mono: 66 dB
Stereo: 60 dB
Distortion..... 0.4% (1 kHz)
Alternate Channel Selectivity..... 62 dB (400 kHz)
Stereo Separation ..... 45 dB (1 kHz)
Frequency Response..... 30 Hz to 15 kHz (±1 dB)
Antenna Input ..... 75 Ω unbalanced

MW (AM) Tuner Section

Frequency range ..... 531 kHz to 1,602 kHz
Sensitivity (IHF, Loop antenna) ..... 350 μV/m
Signal-to-Noise Ratio ..... 50 dB

LW (AM) Tuner Section

Frequency range ..... 153 kHz to 281 kHz
Sensitivity (IHF, Loop antenna)..... 1,500 μV/m

Furnished Parts

FM T-type Antenna..... 1
AM Loop Antenna 1

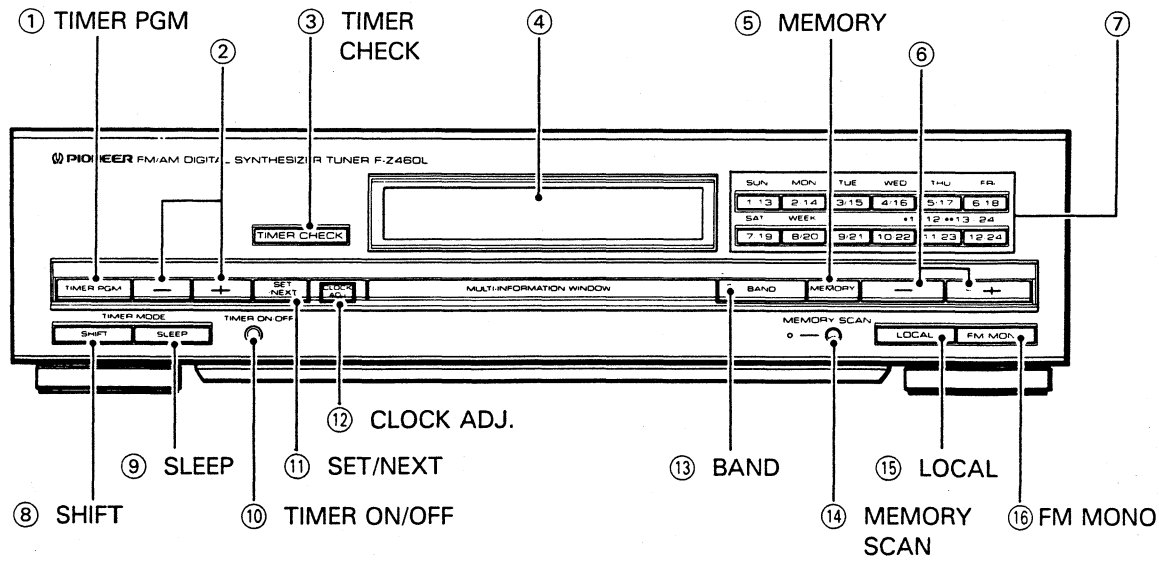
Other

Dimensions ..... 360 (W) x 332 (D) x 90.5 (H) mm
Weight ..... 2.7 kg

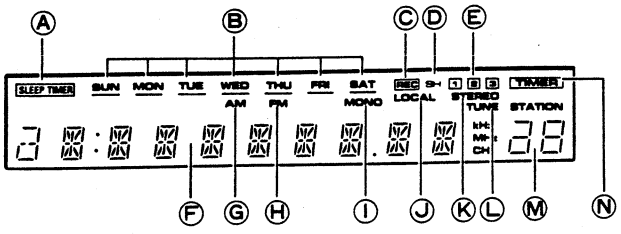
9. FRONT PANEL FACILITIES

FM/AM DIGITAL SYNTHESIZER TUNER F-Z460L

Front panel



Display section



① TIMER PGM switch

Use this to set the weekly timer. The setting changes from TIMER 1 → 2 → 3 in order each time you press the switch.

② –, + switches

Used for adjusting the clock, timer settings and its related adjustments.

③ TIMER CHECK switch

Used for confirming timer setting, after setting for timer playback or timer recording.

④ Display section

⑤ MEMORY switch

Used to memorizing stations. When the switch is pressed, the frequency display will flash. To memorize the frequency of any station, press a station call switch while the frequency display flashes.

⑥ TUNING (–, +) switch

Used for locating stations.
Use "–" switch for lower, and "+" switch for higher frequencies.

⑦ STATION CALL/DAY INPUT switches

[During tuner operation]
Used for memorizing and recalling memorized stations.
[During timer operation]
Used for weekly timer day input.

⑧ SHIFT switch

Used for setting the weekly timer SHIFT function.

⑨ SLEEP switch

Sets the sleep timer.

⑩ TIMER ON/OFF switch

Used to switch weekly timer settings on and off.

⑪ SET/NEXT switch

Used for current time, timer playback, and timer recording setting.

⑫ CLOCK ADJ. switch

Used for starting the clock adjustment.

⑬ BAND selector switch

Each time this switch is pressed, FM, MW, or LW reception is selected in order.

⑭ MEMORY SCAN switch

Press this switch and broadcasting stations memorized in STATION CALL switches will be received one after the other for about five seconds each. If you press the switch again, memory scan stops, and reception of the station being received at that time continues.

⑮ LOCAL switch (When receiving FM broadcasts)

Use this if the broadcast signal is too strong, causing noise and distortion. The attenuator reduces the strength of the signal, reducing noise and distortion.

⑯ FM MONO switch

Turn on when there is much noise during reception of FM stereo broadcasts. The reproduced sound will become monaural but noise will be reduced.

Ⓐ This lights when the sleep timer is operating.
Ⓑ When setting the timer, the line under the day lights.
ⓒ This lights when the timer has been set for recording.
Ⓓ This lights when the shift timer has been set in advance.
Ⓔ This lights when the timer (1 to 3) has been set in advance.
Ⓕ This displays frequency and letters.
Ⓖ This lights when an AM broadcast is being received.
Ⓗ This lights when an FM broadcast is being received.
Ⓘ This lights when FM MONO is ON.
Ⓙ This lights when the LOCAL switch is ON.
Ⓚ This lights during stereo broadcast reception.
Ⓛ This lights during broadcast reception.
Ⓜ This displays the STATION CALL number during reception.
Ⓝ This lights during timer setting and checking.